

## 04/25/14    Agenda

- Warm Up Problem
- Chapter 9 - Quadratic Functions & Equations
  - Day 2 - Graphing using Axis of Symmetry & Vertex Finish

## Homework

- Worksheet 2 - Graph Using AoS & Vertex
- Monday - Review for NGA Final
- Tuesday (4/29) - NGA Final

## Warm Up



Put your name on a slip of paper.

Find the AoS and the vertex of this Quadratic Equation:

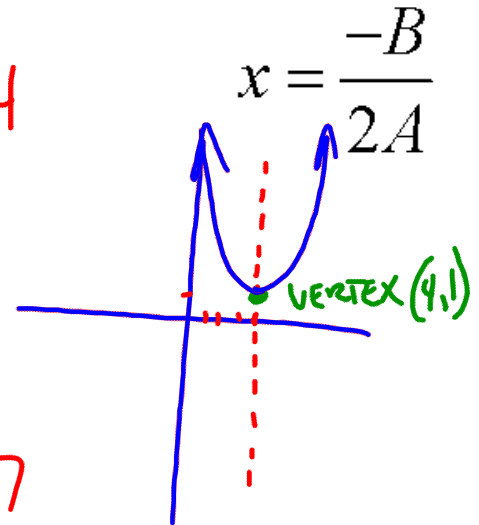
$$Ax^2 + Bx + C$$

$$y = x^2 - 8x + 17$$

$$\text{AoS: } x = \frac{-(-8)}{2(1)} = \frac{8}{2} = 4 \quad x = 4$$

VERTEX (4, 1)

$$\begin{aligned} y &= (4)^2 - 8(4) + 17 \\ &= 16 - 32 + 17 \\ &= 1 \end{aligned}$$



## Warm Up



Put your name on a slip of paper.

Find the following products:

$$90 \bullet \left( \frac{5}{6} \right) = 75 \text{ hours}$$

$$6.25 \bullet 13 = 81.5 \text{ hours}$$

$$8.25 \bullet 0.90 = \$7.425$$

$$\left( \frac{215}{\text{previous answer}} \right) = 28.95 \text{ hours}$$

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# Quadratics - Day 2 - Graphing using Symmetry & Vertex

April 22, 2014

$$Ax^2 + Bx + C$$

Finding the Axis of Symmetry (AoS):  $x = \frac{-B}{2A}$

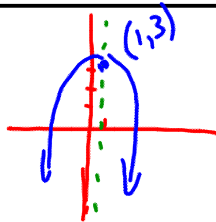
Finding the Vertex:  $(x, y)$

Practice:  $y = -2x^2 + 4x + 1$   $Ax^2 + Bx + C$

Standard Form? **Y**

AoS:  $x = \frac{-B}{2A} = \frac{-(-4)}{2(-2)} = \frac{-4}{-4}$   **$x = 1$**

Vertex:  **$(1, 3)$**   $y = -2(1)^2 + 4(1) + 1$   
 $= -2 + 4 + 1$   
 $= 3$

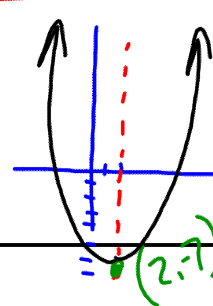


Practice:  $y = 5 - 12x + 3x^2$

Standard Form? **N**  $y = 3x^2 - 12x + 5$

AoS:  $x = \frac{-B}{2A} = \frac{-(-12)}{2(3)} = \frac{12}{6} = 2$   **$x = 2$**

Vertex:  **$(2, -7)$**   $y = 3(2)^2 - 12(2) + 5$   
 $= 12 - 24 + 5$   
 $= -7$



## Quadratics - Day 2 - Graphing using Symmetry & Vertex

April 22, 2014

$$y = x^2 + 4x + 4$$

1. Standard Form?  $y$

2. AoS:  $\frac{-b}{2a} = \frac{-4}{2(1)} = \frac{-4}{2} = -2 \quad x = -2$

3. Vertex:  $(-2, 0)$   $y = (-2)^2 + 4(-2) + 4$   
 $= 4 - 8 + 4$   
 $= 0$

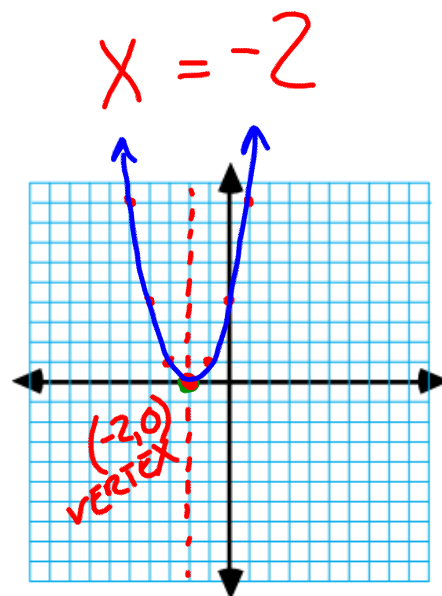
4. Graph the AoS & Vertex:

5. Choose 2 x-values on one side of the AoS:

$$\begin{aligned} y &= x^2 + 4x + 4 \\ &= (-1)^2 + 4(-1) + 4 \\ &= 1 - 4 + 4 \\ &= 1 \end{aligned}$$

$$\begin{aligned} y &= (0)^2 + 4(0) + 4 \\ y &= 4 \end{aligned}$$

x	y
-1	1
0	4



6. Use Symmetry!!!

## Quadratics - Day 2 - Graphing using Symmetry & Vertex

April 22, 2014

$$y = -3x^2 + 3x - 1 \quad A = -3 \quad B = 3$$

1. Standard Form? Y

2. AoS:  $x = \frac{-b}{2a} = \frac{-3}{2(-3)} = \frac{-3}{-6} = \frac{1}{2} \quad x = \frac{1}{2}$

3. Vertex:

$\left(\frac{1}{2}, -\frac{1}{4}\right) \quad y = -3\left(\frac{1}{2}\right)^2 + 3\left(\frac{1}{2}\right) - 1$   
 $-3\left(\frac{1}{4}\right) + \frac{3}{2} - 1 \quad -\frac{3}{4} + \frac{6}{4} - \frac{4}{4} = -\frac{1}{4}$

4. Graph the AoS & Vertex:

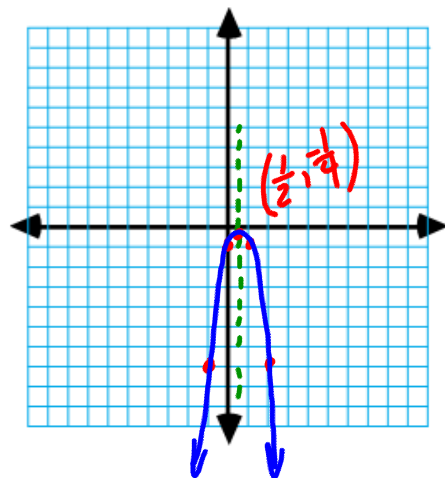
5. Choose 2 x-values on one side of the AoS:

$$y = -3x^2 + 3x - 1$$

$$-3(2)^2 + 3(2) - 1$$

$$-12 + 6 - 1$$

x	y
1	-1
2	-7



6. Use Symmetry!!!

## Quadratics - Day 2 - Graphing using Symmetry & Vertex

April 22, 2014

$$y = 16 + 2x^2 + 12x$$

1. Standard Form? *N*

2. AoS:  $x = \frac{-b}{2a}$   $y = 2x^2 + 12x + 16$   
 $\frac{-(12)}{2(2)} = -\frac{12}{4} = -3$

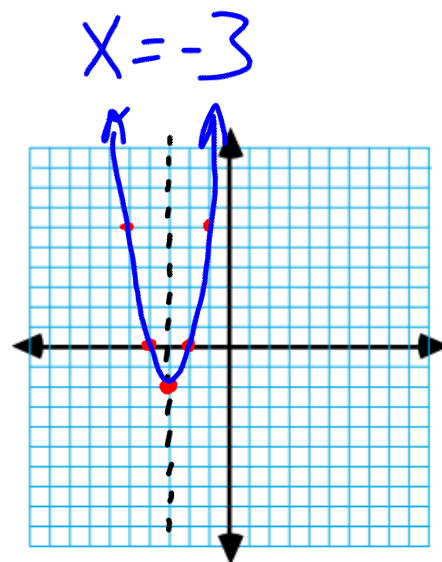
3. Vertex:  $(-3, -2)$   $y = 2(-3)^2 + 12(-3) + 16$   
 $= 18 - 36 + 16$   
 $= -2$

4. Graph the AoS & Vertex:

5. Choose 2 x-values on one side of the AoS:

$$\begin{aligned} y &= 2x^2 + 12x + 16 \\ 2(-1)^2 + 12(-1) + 16 \\ &= 2 - 12 + 16 \\ &= 6 \end{aligned}$$

x	y
-2	0
-1	6



## Quadratics - Day 2 - Graphing using Symmetry & Vertex

April 22, 2014

$$y = x^2 - 4x + 5$$

1. Standard Form?  $y$

2. AoS:  $x = \frac{-b}{2a}$   $x = \frac{-(-4)}{2(1)} = \frac{4}{2} = 2$

3. Vertex:  $(2, 1)$   $y = (2)^2 - 4(2) + 5$   
 $4 - 8 + 5$

$$x = 2$$

4. Graph the AoS & Vertex:

5. Choose 2 x-values on one side of the AoS:

x	y
1	
0	

